PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
SR0015PCT		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/US03/22912	23 July 2003 (23.07.2003)	26 July 2002 (26.07.2002)

International Patent Classification (IPC) or national classification and IPC

IPC(7): C08F 114/18; G03F 7/038; G03F 7/004 and US Cl.: 526/250; 430/270.1; 430/325

Applicant

E. I. DU. PONT DE NEMOURS AND COMPANY

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of ___ sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of report with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
19 February 2004 (19.02.2004)	
Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/ US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer David W. Wu Telephone No. (703) 308-2351

Form PCT/IPEA/409 (cover sheet)(July 1998)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT | PCT/US03/22912

I. Basis of the report

1. With regard to the elements of the international application:*

☒ the international application as originally filed.

☒ the description:
pages 1-24 as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

☒ the claims:
pages 25-29, as originally filed
pages NONE, as amended (together with any statement) under Article 19
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

☐ the drawings:
pages NONE, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

☐ the sequence listing part of the description:
pages NONE, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination(under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in printed form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages NONE

☐ the claims, Nos. NONE

☐ the drawings, sheets/~~fig~~ NONE

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

** Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*

*** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

Internat[redacted] application No.
PCT/U[redacted]2912

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. STATEMENT

Novelty (N)	Claims 1-28	YES
	Claims NONE	NO
Inventive Step (IS)	Claims NONE	YES
	Claims 1-28	NO
Industrial Applicability (IA)	Claims 1-28	YES
	Claims NONE	NO

2. CITATIONS AND EXPLANATIONS

Claims 1-28 meet the criteria set out in PCT Article 33(2)-(4), because the prior art does not teach or fairly suggest the subject matter of the present invention.

Claim 1 relates to a fluorinated copolymer comprising repeating units from (a) a hydroxyfluoroalkyl-substituted olefin and (b) an acrylic monomer having hydroxyl- or polycyclic alcohol-substitution. Claim 22 relates to a photoresist composition comprising the fluorocopolymer of Claim 1 and a photoactive component.

Regarding the limitation of parent Claim 1, Middleton only discloses a method for the production of a fluorine-containing copolymer made from at least one from fluoroolefin or acrylic monomer with a hydroxyfluoro-alkyl-substituted styrene compound. Middleton has used non-functionalized acrylates. Therefore, Middleton is silent with the use of a hydroxyl-containing acrylic monomer (b). In order to prepare resin for photoresist, Okino et al. has disclosed using hydroxyl-containing adamantyl acrylate, while Choi has disclosed using t-butyl hydroxymethacrylate. However, Okino and Choi, in combination or alone, in no way teach or fairly suggest the copolymerization of such specific acrylic monomer with the claimed monomer (a). In summary, the motivation to link monomers (a) with (b) is lacking.

Regarding the limitation of parent Claim 22, the above references, Middleton/Okino or Middleton/Choi, each are further silent about using the claimed cyclic or polycyclic monomer as well as using photo-active fluoroalcohol or protected fluoroalcohol groups. Although Goodall may teach all the limitations of Claims 14-28 (abstract, line1-4; pages 8-20), Goodall cannot fix the deficiency of Middleton/Okino or Middleton/Choi. Therefore, the skill artisan would not have any way to make the obvious connection to add the claimed cyclic monomers as well as using photoactive fluoroalcohol or protected fluoroalcohol groups on the alkenes to prepare the claimed copolymers useful as a photo-resist material.

The key issue, regarding preparing a fluorinated copolymer comprising repeating units from (a) a hydroxyfluoroalkyl-substituted olefin and (b) an acrylic monomer having hydroxyl- or polycyclic alcohol-substitution, cannot be overcome by any or the combination of the above references, therefore, the present invention is novel.

In conclusion, it would not be obvious to a person skilled in the art to arrive at the claimed invention with knowledge from the cited documents. In accordance with the arguments above, the invention claimed in Claims 1-28 is novel; it is considered to involve an inventive step, and it is also considered to have industrial applicability.